MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2015/2016 SESSION

TSN 2201/TCE 2321 – COMPUTER NETWORKS

(All Sections / Groups)

08 MARCH 2015
2:30 p.m – 4:30 p.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 5 printed pages including cover page with 6 questions only.

2. Attempt **FIVE** out of **SIX** questions. All questions carry equal marks and the distribution of marks for each question is given.

3. Please write all your answer in the Answer Booklet provide

Question 1

Given an IP address 129.202.202.202 /20, answer the following questions. Show your workout when possible.

(a) What is the class and default mask for this IP address? [2 marks]
(b) How many bits are used for subnetting and how many subnets can be created using these bits? [2 marks]
(c) How many bits are left for hosts and how many possible IP address can be created per subnet? [2 marks]
(d) What is the subnet address of this IP address? Show your workout. [2 marks]
(e) What is the broadcast address of this subnet? [1 mark]
(f) What is the range of useable IP address (for hosts only) for this subnet? [1 mark]

Question 2

(a) How to map an IPv4 multicast address to a MAC address? [2 marks]
(b) Given IPv4 multicast address: 225.30.20.1 and 227.30.20.1. Map them to MAC addresses. [1 mark]
(c) What is the problem you observe in (b)? [1 mark]
(d) Why problem in (b) occurs? [2 marks]
(e) Only a fraction of Internet are multicast routers. What is the solution if the neighbours of a multicast router are unable to support multicasting? [2 marks]
(f) What is the tree mode used by PIM dense mode and PIM sparse mode? [2 marks]

Continued...

Question 3

(a) The following questions are related to Token Passing method.

(i) What is the function of the Token in this method? [1 mark]

(ii) Where is the single point of failure that causes the network down? [1 mark]

(iii) A token is circulated around the ring network. Under what circumstances a station will release its Token to the next station? [2 marks]

(b) Answer questions (i)-(v) using the procedure in Figure 1.

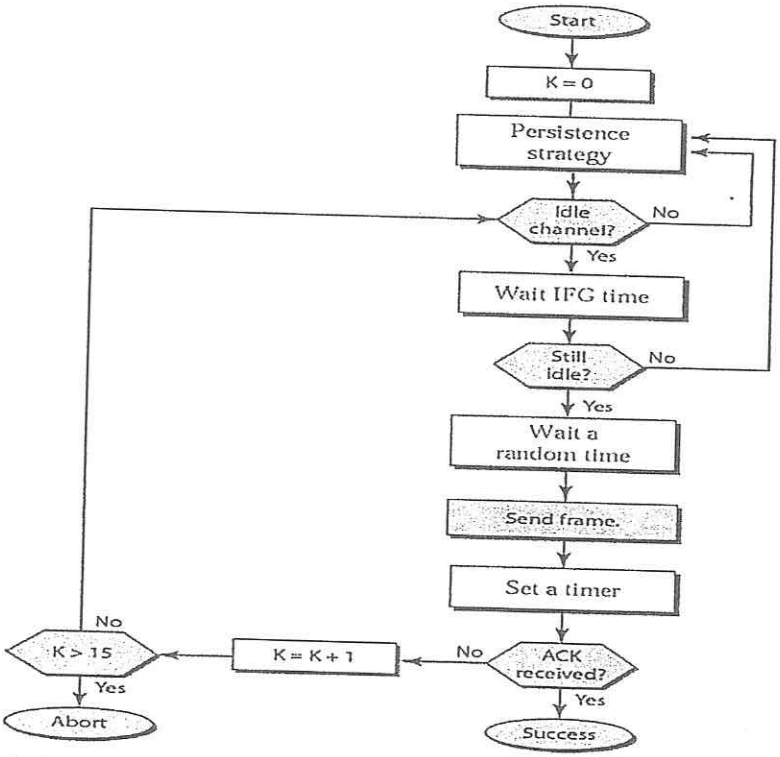

Figure 1. Carrier sense multiple access with collision avoidance (CSMA/CA)

(i) What is used to check whether or not a link is idle? [1 mark]

(ii) How to avoid collisions using this procedure? [2 marks]

(iii) What is the function of the timer in this procedure? [1 mark]

(iv) Which LAN technology uses CSMA/CA? [1 mark]

(v) State a major difference between CSMA/CA and CSMA/CD. [1 mark]

Continued...

Question 4

(a) Define the function of IP address and port address in computer network? [2 marks]
(b) What is the range for well-known port numbers? [1 mark]
(c) "The User Datagram Protocol (UDP) is called a connectionless, unreliable transport protocol." Explain connectionless and unreliable. [2 marks]
(d) What is the function of sliding window in the flow control of Transmission Control Protocol (TCP)? [2 marks]
(e) What is the size of the window for a host if the value of rwnd is 4500 bytes and the value of cwnd is 6000 bytes? [1 mark]
(f) With stop-and-wait Automatic Repeat Request (ARQ), explain the procedure to correct this error - when a frame sent by host A to host B is lost during transmission. [2 marks]

Question 5

(a) Referring to the figure as follows. What is this phenomenon called? Describe this phenomenon. [2 marks]

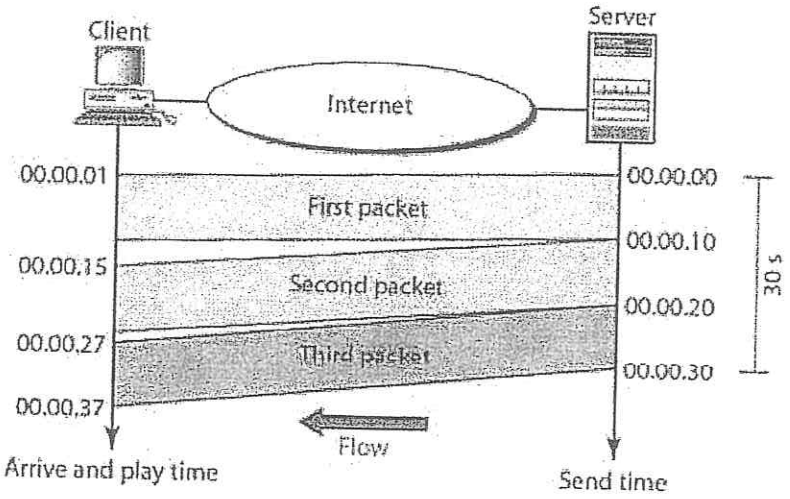

Figure 2. Real-time traffics between the server and the client.

(b) What are the solutions to the phenomenon in (a)? Describe them in brief. [6 marks]
(c) Why TCP and UDP are not suitable for real-time traffics? Give two reasons for each of them. [2 marks]

Continued...

Question 6

(a) What is the disadvantage of using HTTP 1.0 in setting up TCP connections as compared with HTTP 1.1? [1 mark]
(b) What is the difference between the persistent mode and pipeline mode of HTTP 1.1? [2 marks]
(c) "HTTP 1.0 does not support virtual hosting." What is virtual hosting? [1 mark]
(d) The following questions are related to email protocols.

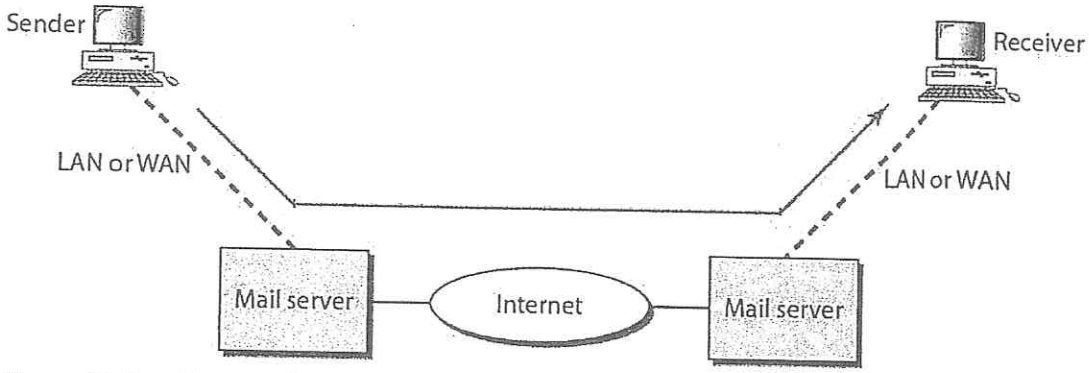

Figure 3. Sending email messages from the sender to the receiver using email clients and involving two mail servers.

Which email protocol is needed
(i) to send email messages from the sender to the mail server? [1 mark]
(ii) to send email messages from a mail server to another mail server? [1 mark]
(iii) to retrieve email messages from the mail server to the receiver? [1 mark]

(e) The following questions are related to File Transfer Protocol (FTP)?
(i) Which transport layer protocol is used by FTP? [1 mark]
(ii) State the port number(s) used by FTP and describe the function of the port number(s). [2 marks]

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